

WHAT IS CLAIMED IS:

1. An apparatus for transmitting a waveform reflecting a time-varying magnetic resonance radio frequency signal comprising:
 - (a) a waveform generator, wherein the waveform generator uses data reflecting the time-varying magnetic resonance radio frequency signal to generate a waveform having a time-varying property; and
 - (b) a signal transmitter that transmits the waveform having the time-varying property to a magnetic resonance scanner.
2. The apparatus of claim 1, wherein the waveform generator comprises a control device.
3. The apparatus of claim 2, wherein the control device is a computer.
4. The apparatus of claim 1, wherein the waveform generator comprises a base-band or intermediate frequency generator and modulator, or a digital frequency synthesizer.
5. The apparatus of claim 1, wherein the time-varying property is amplitude, frequency, or phase.
6. The apparatus of claim 1, wherein the signal transmitter is an antenna or cable.
7. The apparatus of claim 1, further comprising a magnetic resonance scanner.
8. The apparatus of claim 1, further comprising a keyboard.
9. The apparatus of claim 1, further comprising a monitoring device that records operating parameters of a magnetic resonance scanner or free induction decay signals.
10. The apparatus of claim 9, wherein the monitoring device is a digital or analog signal recorder.
11. An apparatus for transmitting a waveform reflecting a magnetic resonance radio frequency signal comprising:
 - (a) a storage medium that stores data reflecting the magnetic resonance radio frequency signal;
 - (b) a waveform generator, wherein the waveform generator uses data reflecting the magnetic resonance radio frequency signal to generate a waveform; and
 - (c) a signal transmitter that transmits the waveform to a magnetic resonance scanner.
12. The apparatus of claim 11, wherein the storage medium is random access memory, a magnetic storage medium, or an optical disk.
13. The apparatus of claim 11, wherein the waveform generator comprises a control device.
14. The apparatus of claim 13, wherein the control device is a computer.
15. The apparatus of claim 11, wherein the waveform generator comprises a base-band or intermediate frequency generator and modulator, or a digital frequency synthesizer.

- 31 16. The apparatus of claim 11, wherein the signal transmitter is an antenna or cable.
- 32 17. The apparatus of claim 11, further comprising a magnetic resonance scanner.
- 33 18. The apparatus of claim 11, further comprising a monitoring device that records operating
34 parameters of a magnetic resonance scanner or free induction decay signals in the storage
35 medium.
- 36 19. The apparatus of claim 18, wherein the monitoring device is a digital or analog signal recorder.
- 37 20. An apparatus for transmitting a waveform reflecting a magnetic resonance imaging signal
38 comprising:
- 39 (a) a waveform generator, wherein the waveform generator uses data reflecting the magnetic
40 resonance imaging signal to generate a waveform having a time-varying property;
- 41 (b) a signal transmitter that transmits the waveform having the time-varying property; and
- 42 (c) a magnetic resonance scanner that receives the waveform and uses it to produce an image.
- 43 21. The apparatus of claim 20, wherein the waveform generator comprises a control device.
- 44 22. The apparatus of claim 21, wherein the control device is a computer.
- 45 23. The apparatus of claim 20, wherein the waveform generator comprises a base-band or
46 intermediate frequency generator and modulator, or a digital frequency synthesizer.
- 47 24. The apparatus of claim 20, wherein the signal transmitter is an antenna or cable.
- 48 25. A method of transmitting a waveform reflecting a time-varying magnetic resonance radio
49 frequency signal comprising:
- 50 (a) providing data reflecting the time-varying magnetic resonance radio frequency signal to a
51 waveform generator;
- 52 (b) generating a waveform having a time-varying property based on the data reflecting the
53 time-varying magnetic resonance radio frequency signal using the waveform generator; and
- 54 (c) transmitting the waveform having the time-varying property to a magnetic resonance
55 scanner.
- 56 26. The method of claim 25, wherein the time-varying property is amplitude, frequency, or phase.
- 57 27. The method of claim 25, further comprising:
- 58 (d) storing data reflecting the time-varying MR RF signal.
- 59 28. The method of claim 25, further comprising:
- 60 (d) detecting the waveform having the time-varying property.

61 29. The method of claim 25, further comprising:
62 (d) testing a receiving system of a magnetic resonance scanner.

30. The method of claim 25, further comprising:
(d) calibrating a receiving system of a magnetic resonance scanner.

31. The method of claim 25, further comprising:
(d) testing data processing algorithms of a magnetic resonance scanner.

67 32. The method of claim 25, further comprising:
68 (d) training operators of a magnetic resonance scanner.